

A new species of *Phanocles* Stål, 1875, from Costa Rica (Phasmatoidea: Diapheromeridae: Diapheromerinae: Diapheromerini)

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With drawings of adults by Jacques Potvin.

Abstract

A new species of Phasmatoidea, *Phanocles costaricensis* n.sp., from Costa Rica as well as its eggs are described and illustrated. It is closely related to the type-species *Phanocles burkartii* (Saussure, 1868), but differs in its smaller size, being comparatively slender, the smaller dilations of the seventh abdominal tergite and in lacking the large lobes on the head and extremities.

Key words

Phasmida, Phasmatoidea, *Phanocles costaricensis* n.sp., Costa Rica, PSG 47.

Introduction

During the 1990s a large stick-insect from Costa Rica used to be bred by several enthusiasts in Europe and was included on the Phasmid Study Group culture list as "PSG 47 *Bacteria* sp.". After closer examination of two specimens kindly given to the author by A.J.E. Harman, the species turned out to be undescribed, belonging to the genus *Phanocles* Stål, 1875 (type species *Bacteria burkartii* Saussure, 1868, by subsequent designation of Kirby, 1904: 353) described from Mexico. The male of this new species is the first to be known from the genus.

The original culture dates from 1982 but apparently died out within a few years. New culture-stock was collected by A.J.E. Harman and M. Salton near Monteverde in Costa Rica at an altitude of about 1000m on 14th August 1989. A report on keeping and breeding this species has been published by Gale (1992). The drawings of the male and female in this paper are of the paratypes in the author's collection.

Abbreviations used:

- BMNH: British Museum of Natural History, London, England.
NHMW: Naturhistorisches Museum Vienna, Austria.
ANSP: Academy of Natural Sciences of Philadelphia, USA.
OXUM: Oxford University Museum, Oxford, England.
INBC: Instituto Nacional de Biodiversidad, Costa Rica.
PB: Private collection of Paul D. Brock, Slough, Berks, England.
FH: Private collection of Frank H. Hennemann, Freinsheim, Germany.
OZ: Private collection of Oliver Zompro, Kiel, Germany.
PEB: Private collection of P.E. Bragg, Awworth, Notts, England.
AJEH: Private collection of Allan J.E. Harman, Hockley, Essex, England.

Phanocles costaricensis n.sp.

Bacteria sp., Gale, 1992: 5, figs: 1 (egg), ♀ & ♂ (page 6, figs not numbered); Potvin, 1995: figs 118 (♂) & 119 (♀).

Phanocles n.sp., Zompro, 2001: 197.

Material

Holotype: ♂ (BMNH) Bred England, Essex, Hockley, 18.vi.1992, male *Bacteria* sp. PSG 47.
Paratypes (3♂♂, 11♀♀, 6 eggs): ♀ (INBC) Costa Rica, Puntarenas Prov., Monteverde, 14.viii.1989, M. Salton & A.J.E. Harman, female *Bacteria* sp.; 2♀♀ (ANSP; BMNH) Costa Rica, Puntarenas Province, Monteverde, 16.viii.1989, A.J.E. Harman. [ex.] A.

Harman & M. Salton coll.; ♀ (OXUM) Costa Rica, Puntarenas Province, Monteverde, 16.viii.1989, [ex.] A. Harman & M. Salton coll.; ♀ (AJEH) Bred England, Essex, Hockley, 14.ii.1991, A. Harman & M. Salton coll.; ♀ (PB) Bred England, Essex, Hockley, 10.xi.1992, [ex.] A. Harman & M. Salton coll.; ♀ (BMNH) Bred England, Essex, Hockley, 11.xi.1992, [ex.] A. Harman & M. Salton coll.; ♂ (AJEH) Bred England, Essex, Hockley, 14.xi.1990, A.J.E. Harman, A. Harman & M. Salton coll.; ♀ (NHMW) Bred England, Essex, Hockley, 10.x.1994, [ex.] A. Harman & M. Salton coll.; ♂ (FH 0472-1) Bred England, Essex, Hockley, 1992, *Bacteria* sp. PSG 47, A.J.E. Harman; ♀ (FH 0472-2) Bred England, Essex, Hockley, 1991, A.J.E. Harman, Originally Costa Rica, 1989; 4 eggs (FH 0472-E): ex Zucht. W. Potvin (Belgien), 1992; ♀ (OZ) Bred England, Essex, Hockley, 14.x.1992, A.J.E. Harman, [ex.] A. Harman & M. Salton coll.; ♂ (PEB-413), ♀ (PEB-412), 2 eggs (PEB-414) Captive bred by P.E. Bragg, 1990. Original stock collected by Allan Harman, 1989.

Diagnosis

Typical for *Phanocles* Stål, 1875, and closely related to the type-species *Phanocles burkartii* (Saussure, 1868), but differing in smaller size, comparatively slender body, the smaller dilation of abdominal tergite VII and the lack of large lobes on the head and extremities.

Description of male (Figs. 1 & 3)

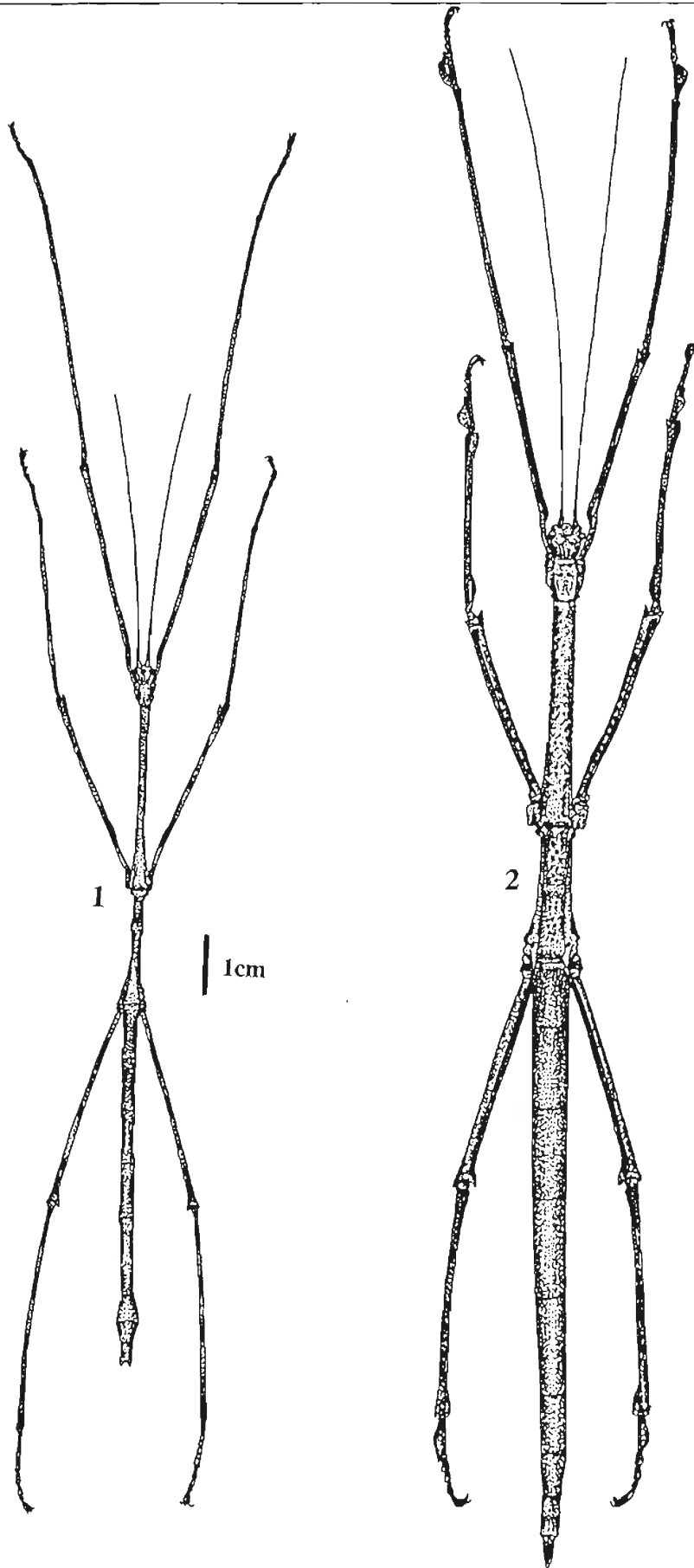
Medium sized for the genus, very slender, smooth, not glossy, dark brown. Mesothorax and mesosternum slightly greenish. Mesofemora apically with broad yellow and black band. Meso- and metatibiae annulated in lighter brown.

Head almost spherical, slightly longer than broad, with two granules between eyes. Eyes projecting hemispherically, with a triangular, black impression between them and with an almost oval, smooth and lighter coloured area at their anterior margin. Back of head with black median line and four dark brown lateral lines on straw coloured background. Antennae reaching posterior of abdominal tergite V. Scapus dorsoventrally depressed, rounded quadrangular, with two elongated furrows ventrally. Pedicellus almost cylindrical, more than two thirds of its width and more than one third of the length of the scapus. Following segments elongated, annulated, indistinctly separated from each other.

Pronotum as long as head, but more slender, lateral margins slightly narrowed in median section. Anterior strongly marginated, followed by a row of three deep depressions. Posterior not marginated. Median line very fine, transverse depression quite shallow. Mesonotum long, slender, parallel-sided, except for slight dilation at mesocoxae. Metanotum very short, only half the length of the median segment, both smooth and parallel-sided.

Abdominal segments darker than thorax, smooth. II shorter than median segment. Length of segments increasing up to V. VI as long as II, VII shorter than VI and only half the length of V. VIII and IX equal in length. Anal segment about two thirds the length of IX. The three terminal segments combined as long as V. Posterior of tergite VIII with a regular dilation. Anterior of IX as broad as VIII, strongly narrowing, the posterior half parallel-sided and of same width as V, strongly laterally depressed. Anal segment convex, pointing downwards, posterior third with median carina. Cerci not projecting beyond posterior margin of anal segment, almost straight, pointing downwards. Vomer with prominent median-furrow on ventral surface. Lamina subgenitalis cup-like, posteromedian with triangular tip and posteriorly depressed and margined thorn in centre.

Profemora basally curved, triangular in cross-section, carinae marginated, with fine black hairs. Cross-section of protibiae quadrate, bristled. Probasitarsus slightly longer than remaining segments combined, with a flat bristled dorsal carina. Second tarsal segment as



Figures 1 & 2. *Phanocles costaricensis* n.sp. 1. Male (paratype); 2. Female (paratype).

long as the following two combined; fourth half the length of third; all margined and bristled; last segment as long as second. Mesofemora trapezoidal in cross-section, posterior surface slightly thickened apically, bristled; apical half annulated, yellow at apical end with the swollen area black and followed by a smooth yellow band; distal half greyish brown. Mesotibiae quadrate in cross-section, all carinae bristled. Mesobasitarsus as long as the remaining segments combined, structured like the protarsus. Hind legs as mid legs but with the swollen area of femora less prominent.

Measurements are given in table 1.

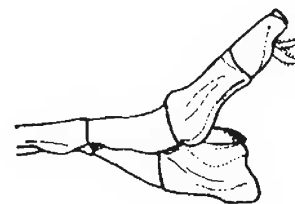


Figure 3. Male, terminal segments, lateral view.

Table 1. *Phanocles costaricensis* n.sp., measurements in millimetres

	Holotype ♂	Paratype ♂♂	Paratype ♀♀ (wild caught)	Paratype ♀♀ (wild caught)
Body	111.8	115.5-118.5	174.0-203.2	158.3-190.0
Body (incl. operculum)	-	-	176.0-211.0	160.5-192.0
Antennae	93.0	> 82.0	90.0	> 73.0
Head	3.5	3.8	7.1-8.8	6.1-7.5
Pronotum	3.6	3.7-4.0	6.7-7.0	6.1-7.1
Mesonotum	28.5	29.0-30.0	37.8-43.6	36.3-43.5
Metanotum	7.0	6.0-7.5	11.4-13.7	10.5-12.0
Median segment	10.4	12.0-11.7	11.7-12.9	11.0-12.1
Profemora	35.4	37.3-37.6	37.0-41.7	37.2-40.0
Mesofemora	27.3	30.4-31.1	29.4-35.0	28.5-38.8
Metafemora	32.8	35.6-35.8	35.0-39.7	32.4-38.6
Protibiae	42.3	45.0-45.9	40.2-43.1	40.8-45.4
Mesotibiae	30.8	32.5-32.8	30.0-33.8	31.0-34.2
Metatibiae	37.2	38.1-39.8	37.0-42.0	36.1-43.0

Description of female (Figs. 2 & 4)

Large, more massive than male, but generally slender insect. Colour uniformly brown, however specimens range from mid-brown to grey when alive. Measurements in table 1.

Head almost spherical, slightly longer than broad, with two stout tubercles behind eyes, similar to the male. Paler area at anterior margin of eyes. Antennae as in male, but only reaching to posterior of abdominal tergite II.

Pronotum as long as head, lateral margins slightly convex. Transverse depression deep.

Anterior half of pronotum with two small tubercles directly next to median line, posterior half with a row of small granules on both sides of median line. Mesonotum as broad as pronotum, covered with several tubercles of different sizes, posterior slightly broadened, the posterior margin strongly raised. Mesosternum tuberculate. Metanotum clearly shorter than median segment, armed as mesonotum.

Median segment with less prominent tubercles than metanotum, as long as abdominal segment II. Remaining abdominal segments smooth. III longer than II, IV the widest and longer than III. V longer than IV. Tergite VII with small lateral lobe ending in a pointed tooth posteriorly. Segment VII as long as II. Sternite VII with a posteromedian praeopercular-organ which can only be seen as two small granules on both sides of the median line. Tergites VIII to X more slender than VII, all of same width; VIII to X combined as long as V. Tergite VIII almost as long as the remaining combined. Tergite IX slightly longer than anal segment, the latter with a faint median carina. Operculum keeled, projecting beyond posterior margin of anal segment by length of tergite IX and X combined; slightly narrower at posterior margin of tergite VIII getting much broader at IX, lateral margins curved upwards. Fila ovipositorius (inferior valvulae) projecting beyond anal segment by the length of tergite IX. Cerci short, not reaching to apex of anal segment.

Profemora basally curved, triangular in cross-section, broadly carinated, bristled. Protibiae as in male, but the carinae more prominent. Probasitarsus as long as remaining segments excluding claw, with a high rounded triangular dorsal carina. Second segment as long as the following two combined, third twice as long as fourth. Fifth as long as second and third combined. Mesofemora trapezoidal in cross-section, furrowed dorsally, posteroventral carina slightly dilated and swollen in apical third. Ventral carinae of mesotibia apically rounded. Mesobasitarsus as long as the following three segments combined, the segments as in protarsus. Hind legs as mid legs, but the elevated ventral carinae of tibia less prominent.

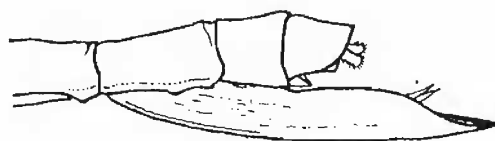
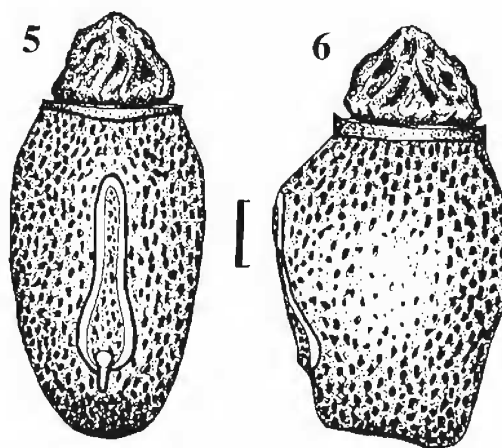


Figure 4. Female, terminal segments, lateral view.



Figures 5 & 6. Egg. 5. Dorsal view; 6. Lateral view. (scale line = 1mm).

Description of egg (Figs. 5 & 6)

Capsule grey, lateral area brown; dorsally and ventrally strongly convex, and slightly depressed at the polar end. Whole surface strongly punctate. Micropylar plate elongate, two thirds as long as capsule, slightly projecting, with white margin; inner area as punctate as capsule. Micropylar cup dark brown. Operculum almost round, flat. Capitulum large, orange and strongly domed with several irregular depressions. Measurements: Length (including capitulum) 4.4mm; capsule length 3.5mm; width 1.5mm; height 2.4mm.

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References

- Gale, M. (1992) PSG 47, *Bacteria* sp. *Phasmid Studies*, 1(1): 5-7.
Kirby, W.F. (1904) *A Synonymic Catalogue of Orthoptera*, Volume 1. British Museum, London.
Potvin, J. (1995) *Phasmatodea*. Bruxelles.
Saussure, H. de (1868) Phasmidarum novarum species nonnullae. *Revue et Magasin de Zoologie*, (2)20: 63-70.
Stål, C. (1875) *Recensio Orthopterorum*. *Revue critique des Orthoptères décrits par Linné, de Geer et Thunberg*. Volume 3. P.A. Norstedt & Söner, Stockholm.
Zompro, O. (2001) A generic revision of the insect order Phasmatodea: The New World genera of the stick insect subfamily Diapheromeridae: Diapheromerinae = Heteronemiidae: Heteronemiinae *sensu* Bradley & Galil, 1977. *Revue Suisse de Zoologie*, 108(1): 189-255.

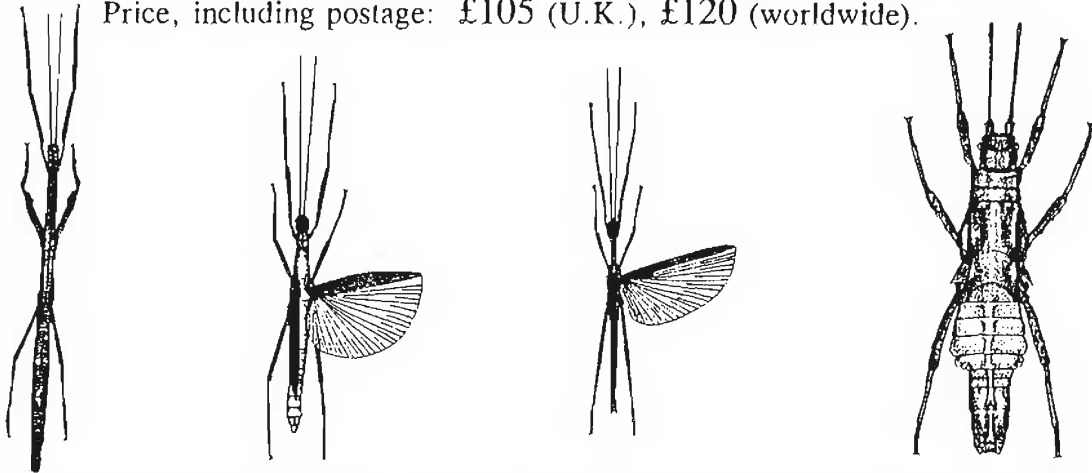
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